Chapter 4

From Transaction to Transformation: Organizational Learning and Knowledge Creation Experience within Informed Systems

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1. Context Setting Introduction

This chapter explores an approach known as Informed Systems, which builds organizational learning conditions and knowledge creation experiences enabled by workplace communication systems and associated information practices. Antecedent thought associated with Informed Systems, which has its roots in relational information literacy, also integrates constructivist learning, systems thinking, and knowledge creation theories to advance 'informed learning', the experience of using information to learn, within constructed workplace ecosystems. Activated as action research and enacted through participatory co-design, this approach privileges collective inquiry to further learning relationships and informed learning experiences (i.e., advance both information and learning experiences simultaneously). Associated professional practices facilitated by both technology- and human-enabled workplace communication systems guide the experience of using information to learn. Such experiences are amplified by dialogue and reflection, to foster knowledge creation for 'learning in action'. Central to the informed systems approach is nimble thought leadership and collaborative information-focused activities, customizable to changing local situations, that foster informed learning capacity in the contemporary workplace.

In this chapter, workplace information literacy is understood to be the experience of using information to learn, in the tradition of the relational approach to information literacy. In *The Seven Faces of Information Literacy* and *Informed Learning,* Bruce (1997, 2008), presents insights into the experience of using information to learn through a relational approach. The early research results include four principles integral to the relational view and seven faces (facets or categories) representing qualitatively different ways of experiencing using information to learn. In depicting the phenomenon as a whole, these principles and categories represent an integration of experiential, contextual, and transformational information experiences, which departed from the predominant behavioral research and skills-based education in vogue when she released her findings.

The relational approach recognizes these guiding elements, based on Paul Ramsden's (1988, p. 26) principles associated with a phenomenographic approach to learning, for using information to learn:

> Learning to use information to learn is about changes in conception – that is, developing new, more complex ways of conceiving of, or experiencing information and information use.
>
> Learning to use information to learn always has content as well as process – that is, people should be learning about something (e.g., disciplinary content) as they engage in learning to be effective information users.
>
> Learning to use information to learn is about relations between the learner and the subject matter – that is, learning to be an effective information user involves the relations between the learner and information.
>
> Improving the experience of using information to learn is about understanding the learner's perspective – that is, helping people to become better information users requires understanding their ways of experiencing effective information use. (adapted from Bruce, 1997, p. 174)

Within this guiding framework, which simultaneously focuses on information use and learning, the qualitatively different ways of experiencing using information to learn, adapted for workplace contexts and listed below, should be understood as suggesting "relationship between information and its contexts of use, including what information is used for." (Forster, 2016, p. ?)

1. Information and communication technologies: harnessing technology for information awareness, communication, and management,

2. Information sources: using information sources (including people) for workplace learning and action taking,

3. Information and knowledge generation processes: developing personal practices or heuristics for finding and using information for novel situations,

4. Information curation and knowledge management: organizing and managing data, information, and knowledge for future professional needs,

5. Knowledge construction and worldview transformation: building knowledge through discovery, evaluation, discernment, and application,

6. Collegial sharing and knowledge extension: exercising and extending professional practices and knowledge bases to workplace insights, and

7. Professional wisdom and workplace learning: contributing to collegial learning through using information to learn to take better action to improve. (Adapted from Bruce, Hughes, & Somerville, 2012)

Taken together, the categories represent the experience of informed learning, ''the phenomenon as a whole" (Bruce, 1997, p. 38), within which learning is understood as changes in how the phenomenon is experienced. Thus, in workplaces or workspaces, learning to fully realize the potential of information experiences requires developing the full range of ways of experiencing the multi-faceted phenomenon.

When professionals become aware of how they experience using information to learn within a context, they become more effective within those contexts as they learn what it takes to make that possible – i.e., "professionals' engagement in those knowledge development and learning processes … allow them to achieve competence and effective practice." (Forster, 2016, p. ?] Within the workplace, for instance, awareness can be furthered through reflective engagement guided by learning-centered information practices – a "process of subjective knowledge development leading to increased understanding" (Forster, 2016, p. ?) - that transform transactions to transformations. (Somerville, 2015b)

Amongst the topics in this chapter, presented in Chapter 2 by editor Marc Forster as within the book's scope, these subjects receive special attention:

"How do individuals share information within teams and how do organizations seek and use information; how do they manage it and use it to develop a knowledge base?"

"In an organizational context, interest lies in how the Information Literate employee contributes to the organization's aims and the ways in which an Information Literate workforce is beneficial to the organization in question." (Forster, 2016, p. ?)

2. Informed Systems Evolution

Since 2003, Informed Systems evolved both through and as a process of organizational design for learning in action, with the intention of fostering information exchange, reflective dialogue, knowledge creation, and conceptual change. Results from evaluative studies (e.g., Somerville, Schader, & Huston, 2005; Somerville, Rogers, Mirijamdotter, & Partridge, 2007; Somerville, 2009; Somerville & Howard, 2010; Mirijamdotter & Somerville, 2009; Somerville, 2015a) reveal that, over time and with practice, this

collaborative learning approach progresses co-workers' capacity for creating systems and producing knowledge.

Critical features of the approach include that it is activated by participatory design and action research, amplified by systems thinking, and rooted in informed learning (Somerville, 2015a). In 'working together' (Somerville, 2009) to generate knowledge, colleagues contribute complementary knowledge skills, work responsibilities, and social perspectives which advance social, relational, and interactive aspects of work life (Townsend, 2014). Organizational capacity builds as colleagues engage in using information to learn in ever expanding professional contexts that exercise evidence-based decision-making and action-taking. (Somerville & Chatzipanagiotou, 2015)

It naturally follows that for this approach to 'travel' – i.e., to prove transferable to other settings, design of decision making processes occurs within larger consideration of organizational structure and workplace culture, which requires local clarification of elements of process design and professional practice appropriate within those circumstances for making collaborative informed decisions. This includes fostering a culture in which information is honored, processes are transparent, and learning is valued. In addition, organizational values and practices must appreciate knowledge generation and therefore support routine collection of local data, organized for discovery, access, and use in future decision making, enacted as evidence based decision making. (Somerville & Kloda, 2016)

Learning the Way to Change: From Theory to Practice

Between 2003 and 2015, research-in-practice studies based on participatory design and action learning evolved this integrated Informed Systems approach to encouraging persistent workplace inquiry within North American university libraries. Three theories, elaborated below, were adapted and integrated to enable robust organizational learning. The work of theorists Christine Bruce from Australia (who advanced informed learning) and Peter Checkland from England (who developed soft systems methodology) promote the kind of learning made possible through evolving and transferable capacity to use information to learn within collaboratively designed workplace communication systems with associated professional practices. Over this period, workplace evolution involved initiating systems co-design activities to stimulate participants' appreciation of the potential relational understandings of effective information use. (Checkland & Holwell, 1998, Bruce 1997) Then co-designed sociocultural practices strategically continued workplace learning, implementing Christine Bruce's informed learning (Bruce, 2008), and, more recently, information experiences. (Bruce, Davis, Hughes, Partridge, & Stoodley, 2014)

The emergent Informed Systems approach recognizes the organization as a knowledge ecosystem consisting of a complex set of interactions between people, process,

technology, and content. Within this context, knowledge emerges through individuals' exchange of resources, ideas, and experiences. (Nonaka, 1994) It naturally follows that "knowledge-related work requires thinking – not only monitoring, browsing, searching, selecting, finding, recognizing, sifting, sorting and manipulating but also being creative, always questioning, interpreting, understanding situations, adapting to changes, tailoring, handling data created, e.g., in the lab, with particular focus on how to put questions, draw inferences, give explanations and conclusions, prioritize … within complex, ever-changing environments." (Materska, 2013, p. 231)

In response, Informed Systems evolved to foster information exchange, reflective dialogue, knowledge creation, and conceptual change within organizations. Over time and with practice, this approach progressed co-workers' capacity for creating knowledge creation systems through engagement in participatory design, amplified by systems thinking, and exercised by collective discourse. Colleagues with differing but complementary knowledge skills and work responsibilities advanced social, relational, and interactive aspects of work life through which transferable learning occurs and organizational capacity builds. (Somerville, 2015b) More specifically, systemic leadership and collaboration models promoted collective 'sense making' that guides organizational 'action taking'. (Somerville, 2015a) Collective knowledge creation capabilities are exercised and extended as continuous improvements develop through workplace systems, relationships, and practices that support continuous learning and refine local practices.

Learning the Way: Through Action to Improve

External evaluation of Informed Systems outcomes at California Polytechnic State University from 2003 to 2006 and at the University of Colorado Denver from 2008 to 2015 demonstrate the efficacy of cultivating informed learning experiences within enabling, co-designed workplace systems. Results in California and Colorado revealed the synergy of systems perspectives and knowledge practices that – in combination - aim to further organizational learning. From the beginning, research results suggested that:

- Integral to the creation of a robust learning organization, leaders are responsible for design of workplace environments supportive of information-rich conversations.
- Systems thinking can be used to contextualize workplace issues in terms that revisit both the nature of organizational information and the purpose of organizational work.
- It follows that as leaders apply systems thinking methodologies and tools to understand the complexities of the organization and its situation, staff members learn to diagnose problems, identify consequences, and make informed

responses within a holistic context. (Somerville, Schader, & Huston, 2005, pp. 222-223)

Longitudinal research findings corroborate that application of these principles changes how co-workers think and what they think about the phenomenon of workplace learning – i.e., the *what* and *how* of their learning (Somerville, 2015a).

- More specifically, people come to see the underlying context and assumptions for their decisions. This new relational understanding predisposes them to adjust their assumptions and strategies as they learn – in other words, as they change their awareness or experience of their appreciative settings.
- Over time and with practice, as people adopt systems and design thinking and tools, collective capacity grows. Successful responses to new information and unique situations evolves as collective awareness of organizational potential grows.
- And, finally, sustained conversations rich in relational context ensure substantial content for transforming the organizational culture. Enabled by maturing collective awareness, dialogue assumes creative potential as it activates rethinking and transformative learning.

3. Informed Systems Elements

The Informed Systems approach offers an information focused and systems enabled approach for 'working together' (Somerville, 2009) in contemporary learning organizations to "develop more effective professional and workplace information use." (Forster, 2016, p. 11) Within the larger framework of the contemporary knowledge ecosystem, informed learning is positioned at the nexus of information experience, technology experience, and learning experience (Somerville, 2015a), essential learning elements embodied in the holistic Informed Systems transformation approach.

Then, with a focus on inquiry- and evidence-based activities to make decisions and take actions within an enabling learning environment, the Informed Systems approach guides co-workers to identify the decisions to be made and the information to be considered for those decisions. (Somerville, 2015a) The leadership model guides thought processes for co-creation of organizational learning conditions requisite for collegial inquiry. Then, at a more operational level, the information process model advances problematizing of the situation, to coalesce shared understanding of inquiry aims, as well as iterative review for continuous local improvements and transferable learning capabilities. This is accomplished through collaborative design and iterative evaluation (Somerville, Rogers, Mirijamdotter, & Partridge, 2007) of workplace systems, relationships, and practices. Over time, increasingly effective, efficient, and elegant organizational structures and professional processes further renewal and advance responsiveness (Somerville, 2015a;

Somerville & Chatzipanagiotou, 2015). Practical outcomes have included user interface customization (Somerville, 2013), technical services reorganization (Pan & Howard, 2009), participatory facility redesign (Somerville & Brown-Sica, 2011), and organisational culture revitalisation. (Pan & Howard, 2010; Somerville & Farner, 2012), which illustrate the transferability of Informed Systems to a variety of workplace learning situations.

This catalytic approach anticipates that fundamental transformation in workplace culture requires that co-workers design and enact information-focused and evidence-based learning experiences. They thereby learn the way to decision-making and action-taking. Increasingly more complex experiences of information exchange, sense making, and knowledge creation, well supported by workplace communication systems and professional information practices, further dialogue and reflection and thereby enrich analysis and interpretation of complexities and interdependencies. (Somerville, 2015a; Somerville & Chatzipanagiotou, 2015)

Learning the Way: Continuous Workplace Learning

Enactment of workplace learning requires an enabling environment for information exchange, sense making, and knowledge creation activities that advance information use and learning relationships among 'resilient workers.' (Lloyd, 2013) "Within such a 'whole systems' framework, organizational leadership must establish and embed … sustainable social interactions and enabling workplace systems" (Somerville, 2015a, p. 49) that can successfully determine: "What information…experiences do we want to facilitate or make possible? What information and learning experiences are vital to further our…professional work?" (Bruce, 2013, p. 20) Such perspectives encourage consideration of provocative questions, such as: "What constitutes information? What informed learning experiences are being used? What information experiences appear? What is being learned? How is understanding/experience of the world changing? What can we do to enrich informed learning experiences? … to introduce new experiences? How would access to a range of experiences, and awareness of these experiences, be demonstrated?" (Bruce, 2012, n.p.)

Intentional organizational learning is thereby enriched through an information experience lens, whereby participants collectively expand their learning horizons through engaging within co-designed communication systems and associated sharing processes. As depicted in Informed Systems models, requisite information-sharing relationships extend beyond traditional team boundaries because knowledge creation requires holistic appreciation of the interrelated elements of workplace information experience which include: its situatedness; its connection with informed learning and informed decisions; and its cognitive and social dimensions, through critical and creative information use that produces generation and sharing of new knowledge useful in taking purposeful action. (Somerville & Mirjamdotter, 2014) In response, Informed Systems (re)learning models, conducted within enabling systems infrastructure, further

collaborative professional processes that are learning-focused and information intensive, to promote sense-making and enable workplace learning. Therefore, within an Informed Systems framework, action-oriented inquiry is paired with inclusive decision-making fortified by inquiry-based dialogue and information-centered reflection.

4. Informed Systems Outcomes

Since 2003, practical workplace outcomes have confirmed the efficacy of an Informed Systems approach to organizational learning. As collective appreciation has grown for an education, rather than a service focus, a consultative (learning) mindset replaced earlier transactional ("busyness") priorities. Concurrently, collective conceptions shifted from "library as warehouse" to "library as learning space" and "systems thinking" replaced "silo thinking." (Somerville & Farner, 2012; Somerville, 2015a) These outcomes recognize that, because organizational culture is experienced as a shared basis of appreciation and action (Schön, 1983), it can be transformed through persistent communication sustained by intentional learning relationships.

Learning the Way: Workplace Learning Synergies

For organizational learning to occur information encounters must be experienced as sufficiently contextualized to activate and extend prior understanding. (Bruce, 1997) When the workplace is conceptualized in this way,

> people can learn to create knowledge on the basis of their concrete experiences, through observing and reflecting on that experience, by forming abstract concepts and generalizations, and by testing the implications of these concepts in new situations, which lead to new concrete experience that initiates a new cycle. This assertion fortified our aspiration to develop reflective practitioners who learn through critical (and self-critical) collaborative inquiry processes that foster individual self-evaluation, collective problem-formulation, inclusive contextualized inquiry, and professional development. (Somerville & Mirijamdotter, 2014, p. 206)

In 'learning the way' to workplace synergies, informed learning serves as a theoretical construct that encourages exploration of learning-related aspects of information experience, here defined as "contextualized instances of using information. It integrates all information-related actions, thoughts, feelings, and has social and cultural dimensions." (Hughes, 2014, p. 34) Informed learning provides a pedagogical framework, which encourages expansion of learners' information using and learning experiences. In other words, informed learning enables making increased sense of multiple information experiences through intentional expansion of information

engagements. As colleagues initiate and sustain inquiries and design actions which are information-centered, action-oriented, and learning-enabled, their professional experiences transform. They reinvent roles, responsibilities, processes, and relationships as active collaborators in the process, and co-design their future.

Compelling questions shift as organizational focus shifts. This occurs organically when members of contemporary organizations create information-rich learning environments within teams and people learn to co-create knowledge enabling systemic structures and processes for 'knowing' relevant information landscapes. Co-designed learning activities generate and sustain workplace synergies for knowledge creation and social interaction. New relationships encourage sharing of information, skills, expertise, and experience exchanged through co-designed practices that further repurposing, redirecting, reorganizing, and relearning for forward movement and nimble responsiveness. Simultaneously, the co-created communication systems and socialization practices, produce increasing variation and complexity in information experiences.

Over time and with practice, these processes and activities transform organizational culture. Reactive and conservative impulses are transformed to proactive and generative responses. In increasingly vibrant learning environments, knowledge emerges through encounters that transform understanding within individuals and among groups. Such ''practice of organizational learning involves developing tangible activities: new governing ideas, innovation in infrastructure, and new management methods and tools for changing the way people conduct their work. Given the opportunity to take part in these new activities, people will develop an enduring capacity for change … with far greater levels of diversity, commitment, innovation and talent." (Senge, 1999, p. 33) In addition, "people will continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together." (Senge, 1990, p. 3)

Systemic Aims: Organizational Transformation

A practical example within the Technical Services department at the University of Colorado Denver Library illustrates the efficacy of integrating information, technology, and learning elements to promote using information to learn, as explicated through organizational capacity building categories revealed in *Informed Learning.* (Bruce, 2008)

- Information and Communication Technology evaluation and design: In 2008, technical services staff members implemented a commercial electronic resources management (ERM) system to manage data about academic e-resources acquisitions, licensing, troubleshooting, and usage statistics. Sadly, this incident involved incorrect product selection and inadequate vendor

communications – reflecting the state of organizational decision making at that time.

In 2009, participatory design of technology-enabled communication systems and associated professional information practices commenced. (Mirijamdotter, 2015, pp. 151-163) Teams employed an iterative learning process (Checkland & Poulter, 2006) to clarify the purpose(s) of internal communication systems. They then began a selection process for a new ERM system, keenly aware of the importance of defining system software outcomes in the request for proposals. In this way, staff members began to develop new capacity to evaluate and design technology enabled systems and associated human workflows.

- Information sources identification and evaluation: Despite the improved ERM system, e-resources database management continued to require considerable troubleshooting, due to the many reasons that disrupt service. These could include lapsed database subscriptions or incorrect Internet Protocol (IP) addresses, university network outages, vendor maintenance downtime, or user account issues.

  So from 2009 onward, technical services staff developed increased familiarity with potentially relevant data and information sources. They learned that effectively managed information facilitates collaboration and advances organizational learning and decision making. (Pan, et al., 2011) While exploration often began with peer-reviewed publications, authoritative evidence also included other information sources and professional knowledge: quantitative and qualitative research results, local statistics, open access data, and even accumulated knowledge, opinion, relationships, and instinct were used, depending on local circumstances. Team members became increasingly able to consider what forms of evidence contribute to decisions, to weigh that evidence, and to make transparent decisions, within complex workplace contexts.

- Information exchange and knowledge generation: In response to a wide variety of potential problems and possible data, staff members frequently exchanged emails to resolve problems, supplemented by regular in-person meetings. Although valuable knowledge was exchanged, participants recognized that these processes did not centralize information about tracking status or problem trends. Data remained data; it was not yet able to inform. (Browning, 2015)

- Knowledge curation and management capabilities: In response, three troubleshooting librarians began to experiment with customizing software to prevent problems from being lost or forgotten and to record and prioritize reported incidents. Their evolving systems and improved workflows facilitated documentation so that effective steps to solving problems could be retrieved at a later date. (Pan & Howard, 2009; Browning, 2016)

- Professional practices and workplace learning: Over time, the trouble shooting team recognized that vast amounts of data about access issues were being collected in problem reports. Team members decided to analyze the data. Results revealed that electronic access issues involve many entities, systems, and resources, requiring cross-department collaboration. Complex problems required persistent monitoring and repeated examination, necessitating refinement of workflows, initiation of new collaborations (Browning, 2015, 2016), and hiring of additional staff.

Over the years, Technical Services members became designers of systems and practices for collaborative evidence-based decision making. Transformative Informed Systems models guided well contextualized, information-rich conversations wherein inter-professional co-workers revisited both the nature of organizational information and the purpose of organizational work. This workplace knowledge development is focused on the team's and organization's aims and priorities. It is experienced in, and transferable to, a range of contexts and settings, and is fundamental to the learning process as a transformative generator of knowledge.

5. Informed Systems Transferability

"Academic environments are seeing rapid change in their intellectual, technological and economic directions. Consequently, libraries must keep abreast of emerging issues and evolving demands, engage with their changing communities, innovate in the face of resource constraints, and communicate their actions and intentions clearly."(Loo & Dupois, 2015, p. 671) Such heightened expectations place considerable pressure on academic librarians to fulfill current needs and anticipate future opportunities. These expectations and priorities are significanct in many other workplaces, due to similar external pressures and environmental developments.

Informed Systems is well suited to furthering workplace renewal, including redesigning facilities, reconsidering collections, and reinventing services because it conceptualizes "the organization as a learning entity." (Forster, 2016,p. ?) The approach recognizes the inadequacy of reliance on 'buzyness' statistics, such as gate counts and article downloads, as accountability measures. (Somerville & Chatzipanagiotou, 2015, p. 3) Rather, "systemic changes require systemic responses because a case-by-case or incident-by-incident response was inadequate, given the magnitude of transformation underway. In response, Informed Systems – which integrates complementary information- and learning-focused theories – addresses a research-in-practice problem that emerges from a problem of practice – i.e., the lack of an integrated model to inform workplace learning in contemporary information and knowledge organizations." (Somerville, 2015a, p. 45)

Informed Systems principles and practices exercise and enable participatory design, action learning, and perpetual inquiry to catalyze constituent engagement, create shared vision, and build stakeholder partnerships through using information to learn. Systemic activity and process models activate collaborative evidence-based information processes within enabling conditions for thought leadership and workplace learning. Persistent cultivation of rich information experiences through information-centered and action-oriented dialogue and reflection advances information exchange and knowledge creation, through which transferable learning occurs and organizational capacity builds. (Somerville, Mirijamdotter, Bruce, & Farner, 2014) Thought leadership and collaborative practice guide – and are guided by - participatory design and knowledge creation.

Throughout, organizational decision making and action taking requires leadership oversight of interactions between new knowledge and shifting contexts (Mirijamdotter, 2010; Somerville & Chatzipanagiotou, 2015), supported by workplace practices that move collective thinking forward. "Knowledge and understanding are thereby learned through the active function of practice by an individual, within the larger body of practice." (Koufogiannakis, 2013b, p. 166) Reflective practitioners learn through community experiences within workplace ecosystems in which intersubjectively created meaning is reinforced and changes over time through constant negotiation (Gherardi, 2009) of complexities and interdependencies.

I**nformed Systems Transformation: Essential Workplace Elements**

Informed Systems recognizes that individuals select information from the workplace (and extended) environment based upon a worldview consisting of existing interests, experience, and values. Within this systemic context, thought leaders and knowledge activists offer filters to select what is important from available information models to expand individuals' ability to understand and use information to learn (Nonaka, 1994). These interventions are challenging because tacit knowledge "consists of mental models, beliefs, and perspectives so ingrained that we take them for granted and therefore cannot easily articulate them" (Nonaka, 2007, p. 165). However, as "new explicit knowledge is shared throughout an organization, other employees begin to internalize it – that is, they use it to broaden, extend, and reframe their own tacit knowledge" (Nonaka, 2007, p. 166) through "purposeful discourse focused on exploring, constructing meaning and validating understanding." (Garrison, 2014, p. 147)

In practice, Informed Systems requires the design of enabling systems and informing activities through a strong 'people oriented' approach, customizable to local circumstances. The approach recognizes that workplace learning originates from interactions and relationships among organizational members, which enable investigation and negotiation of diverse interests, judgments, and decisions. Reflection and dialogue processes promote learning through critical (and self-critical) inquiry experiences that foster individual self-evaluation, collective problem-formulation, and

nuanced professional development. (Somerville & Mirijamdotter, 2014) Informed Systems thereby promotes transformation in organizational awareness and workplace behavior through intentional design that nurtures engagement among individuals and with information.

6. Organizational Readiness Factors

Informed Systems employs organizational design principles and professional information practices that enable and enact collaborative decision making and action taking within an inquiry-intensive and evidence-based workplace attentive to both process and content. In a workplace culture in which collective processes are transparent and evidence sources are privileged over speculation or opinion, purposeful learning processes are necessarily collegial, conducted within a positive work environment, enabled by appropriate processes for open discussions for decision-making and action-taking. "Knowledge and understanding are thereby learned through active…practice by an individual, within the larger body of practice" (Schön, 1983, p. 50), which situates and contextualizes intersubjectively created meaning. Understanding changes over time through renegotiation.

Enactment of workplace learning requires an enabling environment for information exchange, sense making, and knowledge creation activities that advance information use and learning relationships through socio-cultural processes and practices co-designed by co-workers. Collective capacity for discussion and analysis of complexities and interdependencies grows through intentional construction and reconstruction of the learner during interactive relationships and sustainable networks comprised of information, technology, and people. Such "construction of learning, of learners and of the environments in which they operate" (Hager, 2004, p. 12) evolve to adopt and adapt, create and recreate, contextualize and re-contextualize through wider and wider circles of consultation, cooperation, and collaboration. Therefore, requisite workplace conditions necessarily also must account for the human interactions, and organisational complexity within which decisions are being made."

Despite considerable organizational variation, some 'lessons learned' have emerged about conditions that foster workplace learning (Somerville & Kolda, 2016), including factors such as methods of decision making and relationships among workplace colleagues (Koufogiannakis, 2013), determine organizational dynamics. Other cultural enablers include respect for information as evidence, respect for information as knowledge, willingness to share information, trust in information, and trust in organizational systems. (Oliver, 2011) In response, Informed Systems leadership activities purposefully cultivate systemic communication and professional practices that foster and support collegial inquiry. Then co-workers can purposefully co-create information experiences and organisational knowledge that enlivens collective capacity to inform decisions, produce improvements, and sustain relationships to "interact with,

evaluate, and share information effectively and flexibly." (ACRL, 2015, n.p.), "constantly evolving organizational understanding and practice."(Hallam, Hiskens, & Ong, 2014, p. 85)

7. Organizational Transformation Reflections

"Using information to learn … is about being aware of the kinds of information we are using, how we are using information and how different forms of information come together to inform and transform our work." (Bruce, Hughes, & Somerville, 2012, p. 8-9) Through this appreciative lens, Informed Systems models guide how and why organizations build human-centered communication systems for knowledge creation. Along the way, attention moves from transaction based activities to organizational transformation outcomes enacted through intuiting, interpreting, integrating, and institutionalizing knowledge. (Crossan, Lane, & White, 1999) As co-workers reinvent roles, responsibilities, processes, and relationships, they harness the potential of reflective inquiry amidst collaborative action. (Somerville, 2015a) Throughout, attention must ensure inclusive dynamics. Taking action to improve then produces changes in the ways of perceiving and of becoming newly aware and thereby learning.

Viewed through an information experience lens, colleagues collectively expand the information horizons of their work environments through wider and wider circles of consultation, cooperation, and collaboration. While engaging with new information types and communication processes, they establish productive information-sharing relationships that extend beyond team boundaries through critical and creative information use and through generation and sharing of new knowledge necessary to taking purposeful action. (Somerville & Mirjamdotter, 2014) Informed Systems thereby offers models for (re)learning processes, conducted within enabling systems infrastructure for collaborative information practice.

A twofold focus on informed learning and systems thinking, Informed Systems promotes changes in organizational awareness and behavior through building information that leads to changes and also building ways that people use information that leads to the collective knowledge that produces changes. Building knowledge production capability in turn requires organizational design that recognizes the importance of cultivating both formal and informal interactions among individuals and with information. When individuals and groups in boundary crossing settings exchange information and create knowledge in ever expanding professional contexts, decision making priorities and requisite authoritative evidence become clear. And, as colleagues learn to initiate and sustain inquiries and actions which are information-centered, action-oriented, and learning-enabled, they reinvent roles, responsibilities, processes, and relationships as active collaborators in the processes that enable relevant evidence to be used to make effective and efficient decisions, which co-design their future.